Environmental Science

THE EFFECT OF WATER-JETTING SEDIMENT IN RUSH LAKE ON THE CONCENTRATION OF DISSOLVED ORTHOPHOSPHATE, NITRATE AND LEAD

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Rush Lake, a once premier breeding, feeding, and migratory pothole located in Winnebago County, Wisconsin, is now home to fewer numbers of local birds as a result of changes in habitat that have occurred over the last one hundred and fifty years. One of the contributing factors to the degradation of the waterfowl habitat was the use of lead shot in hunting of waterfowl until 1984 in this prairie pothole. Around 82 tons of lead shot have been placed in the lake since the 1840's. Most of this lead shot is currently in the upper layers of the sediment in the lake and is easily accessible for fauna. Some concerned citizens have found a possible solution in water jetting to bury the lead pellets in the sediment out of reach of most fauna. Although jetting has begun and has been shown to be effective the efforts have been stopped due to a lawsuit questioning the ethical implications of water jetting. The plaintiffs who filed this suit hired an ecologist who claimed that jetting would produce harmful levels of dissolved phosphates and nitrates, which could cause algal blooms choking the lake. Our study was intended and designed to help state agencies and concerned local citizens obtain useful information in regards to the dissolved lead, orthophosphate and nitrate concentrations of jetted versus non-jetted areas of Rush Lake. Water and sediment samples were obtained from both jetted and non-jetted areas. Lead was tested for using atomic absorption spectroscopy. The orthophosphate and nitrate concentrations were tested for using uv vis spectrophotometry. Our results show that the claims made by the plaintiff and their ecologist appear invalid in that there is not a significant difference for dissolved nitrate, orthophosphate and lead between pre-jetted water and post-jetted water.